

What is claimed is:

1. A method for forming a contact using a Cu line in semiconductor fabrication, comprising:

forming a dual damascene pattern by etching a pre-metal dielectric (PMD) layer formed on a substrate, wherein the dual damascene pattern includes a contact hole portion located on the substrate and a trench portion located on the contact hole portion, the width of the contact hole portion being narrower than that of the trench portion;

depositing a tungsten diffusion barrier on sidewalls of the damascene pattern;

filling the damascene pattern with tungsten by depositing tungsten on the tungsten diffusion barrier to form a tungsten layer;

chemical mechanical polishing a portion of the tungsten layer over the trench portion;

etching an upper part of the tungsten layer in the trench portion to form a tungsten plug that occupies a lower part of the tungsten layer in the trench portion and the contact hole portion;

depositing a Cu diffusion barrier on the tungsten plug; and

depositing a Cu on the Cu diffusion barrier.

2. A method as defined in claim 1, wherein the tungsten in the trench portion is dry-etched so that the tungsten in the contact hole portion is not exposed.

3. A method as defined in claim 2, wherein the tungsten diffusion barrier includes a titanium layer and a titanium nitride layer.

4. A method as defined in claim 3, wherein the Cu diffusion barrier includes a tantalum layer and a tantalum nitride layer.
5. A method as defined in claim 4, wherein heights of the Cu line and the tungsten plug are approximately 250nm and 300nm, respectively.
6. A method as defined in claim 5, wherein diameters of tungsten plug at the contact hole portion and the lower part of the trench portion are approximately 185nm and 500nm, respectively.